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Medical Book News

Editorials

Contemporary Progress

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EDITORIALS



The "Right School" for Babies

WE don't suppose that the superiority of mother's milk for infants over formula-feeding was ever better realized than at present, and yet the practice of breast-feeding seems to be fading out in many areas of this country, with a high cost in terms of infant morbidity and mortality.

Theoretically, there is a Babies' Bill of Rights, but it is violated much more than the first ten amendments of our Constitution.

One proof that such a Babies' Bill of Rights exists unwritten, like the British constitution, are the demands for Mother's Milk Bureaus, of which there are eighteen in the United States and Canada. That is, at the same time that breast nursing is being given up, mothers are looking for depots of supply, at least for premature or sick infants. This effort is an acknowledgment of the infant's basic rights.

Now that the war is over the type of organization behind the Red Cross Blood Banks is needed for the institution of more Mother's Milk Bureaus, since the existing eighteen are inadequate in number, splendid though their work has been.

Those responsible for the Bureaus are giving much thought to the problem of securing a square deal for every baby at least for the first month or two of his life, and excellent suggestions are being made.

We usher the child into a now "haggard" world, to use Mr. Churchill's eloquent term in his recent Missouri address, and then defraud him by handing him a formula instead of a natural supply—about the meanest trick of which mean man is capable. What is "taking candy from a baby" compared with such an act?

Our own suggestion regarding a psychologic approach to this serious matter would

be to make our people better understand that any family of social consequence in the past has always insured the breast feeding of its members. Thus the royal families and high nobility in Europe would never have thought of subjecting their newborn to inferior sources of food supply; so also among the aristocracy of the old South.

All else has failed. We suspect that the snobbish appeal would have great force. Let a social hall mark attach to the fortunate graduates of swanky mammary schools—the "right" biologic Grotons and Etons of America.

With this kind of social significance attaching to breast feeding parents would be *ashamed* not to accord the *privilege* to their sons and daughters, "the hope of the world."

Healthy Reactions to Political Medicine

NEW York Medicine, in its issue of March 5, draws a picture of compulsory sickness insurance on a national scale, with a surging clientele descending upon the doctor with every trivial complaint, as well as serious ailments and a vast group seeking "disability" certificates. *New York Medicine* reminds us that the "customers" in advance, and warns us cost of such service will have been paid by not to forget the reports in quadruplicate for each case.

No wonder the *Journal of the Oklahoma State Medical Association* offers a creed for self-respecting people, the sentiments in which will, we are sure, be heartily cheered by all of us:

O Lord, we thank Thee for all blessings of the past. For the privilege of the present and the prospect of the future. Make us grateful for the bounty Thou has provided and help us share it with the harassed and hungry throughout the world. Give us strength to meet our obligations with fit-

—Concluded on page 112

PULMONARY TUBERCULOSIS MODERN CONCEPT AND RECENT ADVANCES IN TREATMENT

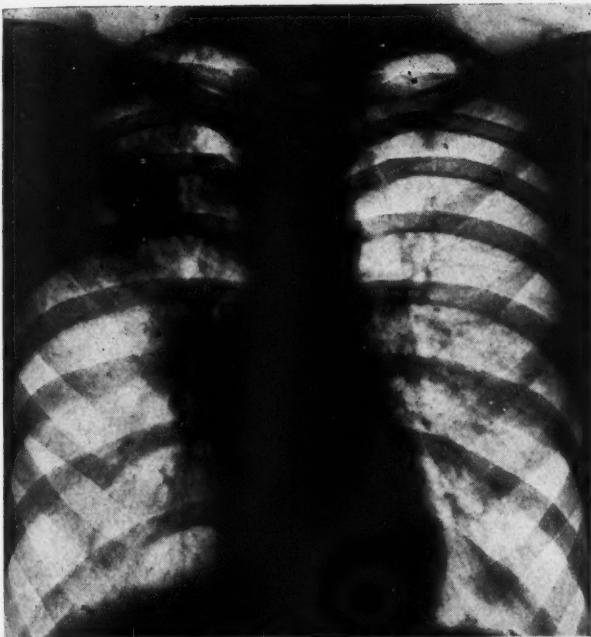
I. Ellis Rudman, M.D.
Philadelphia, Pa.

III

TRUE scientific research in tuberculosis, we can say, began with the discovery by Koch that the tubercle bacillus is the sole etiologic factor. It ushered in an era of intense study of the tubercle bacillus in all the phases of its life cycle, *in vitro* and *in vivo*. Every phase of its existence was delved into. Meticulous study was made of the end products of its growth in culture media and the end results of its presence in the human body. Not only did we learn a great deal about its physical properties but also about its chemistry. We learned that its invulnerability to drugs and chemicals is due to its armor, a waxy capsule that protects its protoplasm. The hope engendered that the new "wonder drugs" would prove of value in combating tuberculosis was quickly dispelled when one after another of the sulfonamides was found to be valueless. A new ray of hope appeared on the horizon when it was found that the sulphones have a deterrent effect upon the spread and progress of tuberculosis in the experimental animal.

IN 1941 we were given a disodium formaldehyde sulfoxylate derivative of *diaminodiphenylsulfone* to use for experimental purposes in the treatment of pulmonary tuberculosis. The protocols emanating from the Mayo Clinic Research Laboratory on the use of this drug were very encouraging. The survival time of the experimental animals was greatly increased and it was noted that the spread of the disease was discrete and showed a tendency to regression. We selected for trial of the new drug above mentioned twelve far advanced cases of pulmonary tuberculosis. It is granted that the material selected was rather of the poor variety. None of the cases have showed any improvement for some time and several are on the down-grade. It was felt that there was nothing to be lost by the use of this new chemo-

therapeutic agent in any of these cases since the prognosis in every case was unfavorable. We hesitated to use more favorable types of cases for fear that delay of the usual orthodox method might impair their chances for recovery. The twelve cases selected were meticulously studied. A weight chart was kept and a temperature record was made daily for a period of six months. Sulfone blood level estimates were made twice weekly. Blood counts were made at frequent intervals. Of the twelve cases, six were alerted to the fact that a new remedy was to be tried in their case. Six were not told that any medication to affect their tuberculous lesion was being administered. As often happens in the tuberculous, the institution of any new measure or therapy improves the morale and benefits the patient temporarily. For a period of six weeks or so, the alerted patients expressed the opinion that there was a return to a feeling of well-being and in all there occurred a slight gain in weight ranging from two to six pounds. No such benefits were noted in the unalerted cases. As the progress of the observations went on, it was noted that two cases developed skin rashes. One developed intractable diarrhea and all showed reduction in the count of the red blood corpuscles and to a lesser degree of the white blood corpuscles. In only one case did the blood picture reveal a hemolytic anemia of such severity as to require a blood transfusion. In no instance was there sputum conversion or reduction of the Gaffky count, nor was the pathogenicity of the bacilli in any way affected, as shown by animal inoculation. Clinically, no changes occurred. The roentgenologic findings were unaltered. Though it was not expected that cavitation would be affected in any way by the use of this drug, the keenest disappointment was felt when exudative areas showed no change. At the end of six months, the drug was discontinued in all cases. Though no serious harmful effects that were not easily remedied were noted



*Case 1. Fig. 1.
(Above) Mr. Edward B.
B. Age 19 6/21/39*

*Shows an acute ex-
udative cavitary lesion
in the right upper
lobe.*

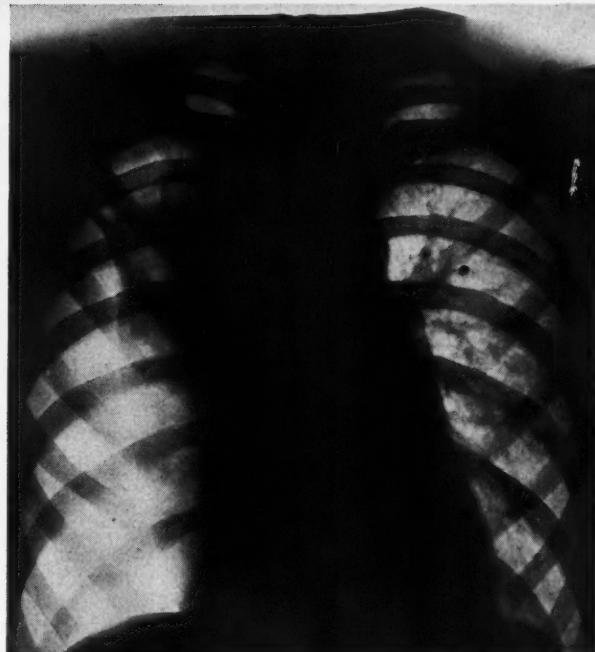
in any one, no benefit could be ascribed any cases as due to the use of the disodium formaldehyde sulfoxylate derivative of diamino-diphenylsulfone.

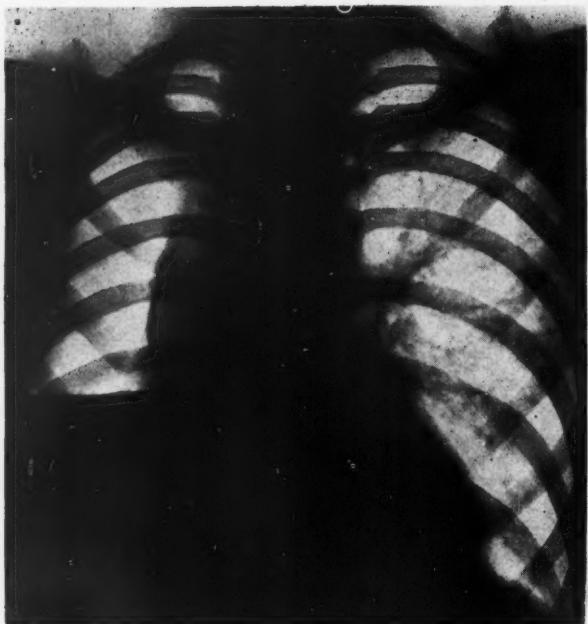
A SUMMARY of our findings and conclusions was ready for publication. Since our findings were of a negative nature, we were requested to withhold publication on the contention that our selection of cases was poor

and that more favorable results were reported by other observers who used incipient and moderately advanced cases of pulmonary tuberculosis. To our surprise, an article appeared in one of the Digest magazines at that time hailing the new sulfone derivative as a cure for the white plague. The office of the drug concern was soon besieged by many people clamoring for the drug.

*Case 1. Fig. 2. (Be-
low) Mr. Edward B.
6/23/39*

*Shows 25% collapse
of the right lung and
an adhesion to the sec-
ond rib anteriorly
holding the cavity
open.*





Case 1. Fig. 3. Mr. Edward B. 9/5/39

Shows the end results following a successful severing of an intrapleural adhesion. The lung is now about 75% collapsed. Sputum conversion took place in a short time after the operation. A small amount of fluid is present in the right pleural space. This was aspirated once and 300 cc. of clear exudate was removed. The rest of the fluid was absorbed in time.

Telegrams and telephone messages began to pour in by the hundreds. Fortunately the regulations of the Pure Food and Drug Act prevented the distribution of the drug indiscriminately to those not capable of making careful study of its use and controlling any untoward results by proper measures. It is not that the general public is gullible but rather that it has become too credulous in this age of astounding scientific discoveries. It is easy to lead the people to believe that it is not beyond the scope of science to find a "wonder drug" that will successfully combat tuberculosis, but the disodium formaldehyde sulfoxylate derivative of diaminodiphenylsulfone

proved to be utterly worthless. Since 1941 the accumulation of data from many sources has confirmed our observations and justified our conclusions.

It is within the realm of possibility that a chemotherapeutic or antibiotic agent will be found that will exert a direct effect on the tubercle bacillus and that the exudative lesion will be conquered before cavitation and excavation begin. But once tissue destruction has taken place and a cavity formed, it is hard to conceive of a method short of collapse therapy that can be of any real benefit.

THE shortcomings of artificial pneumothorax are due to the fact that adhesions frequently nullify its benefits. An adhesion between the visceral and parietal pleura will often keep a cavity open and no matter how long a pneumothorax is continued, failure is bound to result. The practice of using large amounts of air at each refill in order to stretch the adhesions is to be condemned because such practice often leads to the formation of pleural effusions and even empyema. The work of Jacobaeus and Unverricht has opened a new era in the treatment of pulmonary tuberculosis by means of artificial pneumothorax. These thoracic surgeons have showed that many adhesions can be readily severed with safety. The Coryllos modification of the Jacobaeus-Unverricht apparatus is now almost universally used by "chest" men. It is a compact instrument that uses the gal-

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MEDIC

vanocautery to accomplish its results. The patient, in whom adhesions are present, interfering with adequate collapse of the lung, is best studied by means of stereoscopic x-ray films. The character, direction, and type of adhesions can be gauged more or less by these studies and the procedure to be followed can then be planned. Because of the wide variation as to the location and type of adhesions encountered, it is hard to give specific directions as to the proper posturing of the patient on the operating table. As a rule, the patient is placed on the table in the horizontal position, lying on the good side with the sick side uppermost, supported by sandbags or pillows and leaning backwards. The skin

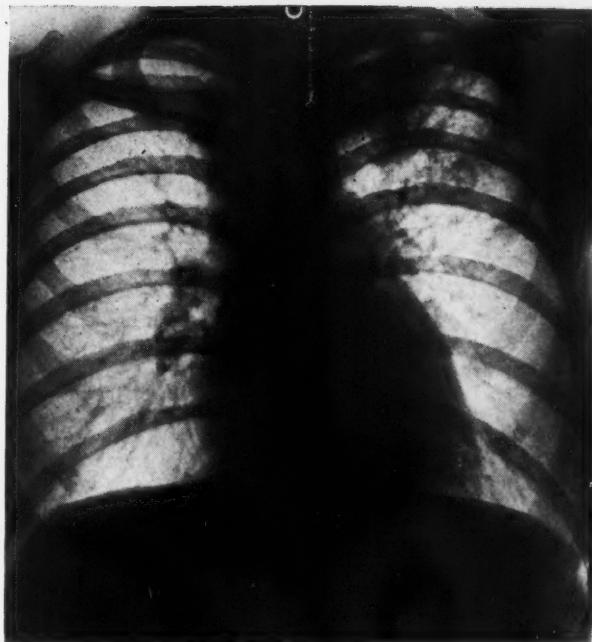
is sterilized and prepared as for any major surgical thoracic procedure. With a trocar and cannula a hole is made through the chest wall. The adhesions are viewed with the thoracoscope. Once the position of the adhesion or adhesions is ascertained and operability decided upon, another puncture is made nearby in the chest wall with a trocar and cannula and the cautery knife is inserted. It requires a little skill and practice to keep the adhesions in focus and to apply the cautery.

It is a fact that the x-rays are frequently misleading as to the extent, thickness, and character of the adhesions. What frequently appears in the x-ray film as a thin narrow band often proves to be wide, thick and even multiple. In those cases where the adhesions can be severed cleanly and completely, the end results are most gratifying. A pneumothorax that was ineffectual

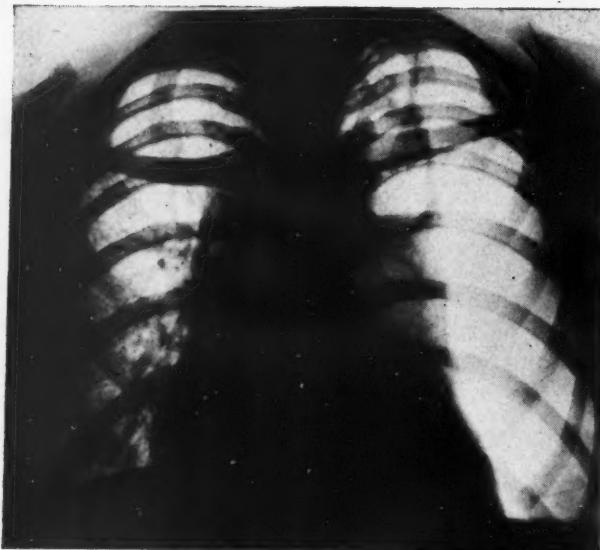
and worthless becomes perfect and worthwhile for the continuation of treatment. Cavities held open by adhesions, once they are severed, quickly close and sputum conversion takes place.

A N illustrative case is that of Edward B. He was taken ill in June, 1939. A husky, athletic sort of a boy, aged 19, his first symptom was a pulmonary hemorrhage. Physical examination, soon after this episode, revealed an acute exudative cavitary lesion in the right upper lobe. Pneumothorax was instituted immediately but a firm adhesion to the second rib anteriorly kept the cavity in the right upper lobe open. Hemorrhages continued. An internal pneumolysis was done and an excellent pneumothorax resulted.

Case 1. Fig. 1 Mr. Edward B. Age 19
6/21/39.



Case 2, Fig. 4. Mrs. Bertha K. Age 32 4/6/38
Shows an extensive caseous pneumonic lesion throughout the upper two-thirds of the left pulmonary field.



Case 2. Fig. 5. Mrs. Bertha K. 7/5/38

Shows 65% collapse of the left lung and the presence of a small effusion in the left pleural space. Several adhesions from the apex of the lung to the first rib keep a large cavity open.

Shows an acute exudative cavitary lesion in the right upper lobe.
Case 1. Fig. 2 Mr. Edward B. 6/23/39.

Shows a 25% collapse of the right lung and an adhesion to the second rib anteriorly holding the cavity open.

Case 1. Fig. 3 Mr. Edward B. 9/5/39.

Shows the end results following a successful severing of an intrapleural adhesion. The lung is now about 75% collapsed. Sputum conversion took place in a short time after the operation. A small amount of fluid is present in the right pleural space. This was aspirated once and 300

cc. of clear exudate was removed. The rest of the fluid was absorbed in time.

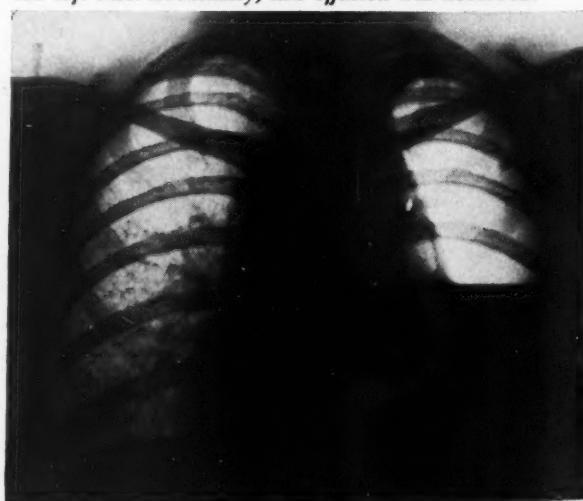
THE next case shows that some adhesions are difficult of access but with a little extra effort they can be coped with. Case 2. Fig. 4 Mrs. Bertha K. Age 32 4/6/38.

Shows an extensive caseous pneumonic lesion throughout the upper two-thirds of the left pulmonary field.
Case 2. Fig. 5 Mrs. Bertha K. 7/5/38.

Shows a 65% collapse of the left lung and the presence of a small effusion in the left pleural space. Severe adhesions from the apex of the lung to the (Concluded on pg. 122)

Case 2. Fig. 6. Mrs. Bertha K. 11/14/38

Shows the end results of successful internal pneumolysis. The lung is now about 90% collapsed. There is no longer any evidence of cavitation. A small effusion is present on the left side. Eventually, this effusion was absorbed.



RECENT ADVANCES IN CELIAC DISEASE

Kenneth Jennings, M.D., Brooklyn, N. Y.

WHEN I was asked to prepare a paper for this meeting I happened to be reviewing for my own benefit the more recent papers relating to celiac disease and since I had found some details which were of interest to me and which by conversation with fellow physicians I noticed were not generally known, I felt you would not object to having these brought to your notice.

Samuel Gee of St. Batholomew's Hospital, London, laid the foundation of our present knowledge in an article entitled "On the Coeliac Affection" printed in the hospital report of 1889. He stated that the condition was a chronic nutritional failure of infants and children, characterized by the following findings:

The passage of large, pale, soft, offensive stools; abdominal distention; wasting of the whole body except the face; stunting of growth; marked anorexia with nervous disturbances, especially crankiness; and disturbances of mineral metabolism. The prognosis was poor because of intercurrent infection.

IF in the beginning all cases were thought to have a single cause we know today that there are at least three different causes which give rise in the order of their occurrence to idiopathic celiac disease: celiac disease due to pancreatic insufficiency of two types, one with insufficiency of all three enzymes and one showing insufficiency of amylase alone; and celiac disease due to mechanical obstructions of the pathways of digestion or absorption, examples of which would be various intestinal stenoses and Hodgkin's disease. This last group no longer enters our discussion. From the above it is plain to see why the condition is now more often called the celiac syndrome.

With regard to idiopathic celiac disease microscopic and gross pathology reveals only starvation and intervening infections.

Read before the Scientific Session of the Associated Physicians of Long Island held at St. Mary's Hospital, Brooklyn, January 26, 1946.

With regard to the first type of pancreatic insufficiency, it reveals a stenosis of the acinar ductal system with fibrosis and cyst formation but with no alteration in the islands of Langerhans, whereas in the insufficiency affecting amylase alone no alteration of the pancreas is noted.

IN the crude clinical differentiation of these three types there are several important leads:

First: Idiopathic celiac disease does not appear before nine or ten months of age; it is accompanied by steatorrhea if the child is on the average diet of a child of this age.

Second: Pancreatic insufficiency affecting all the enzymes, which we shall from now on call cystic disease of the pancreas, is congenital so that the child does not do well from birth, has steatorrhea on an average diet, and has repeated attacks of pulmonary disease of a type which may simulate asthmatoïd bronchitis, or exhibit obstructive emphysema, culminating in bronchiectasis, in the worst cases with staphylococcus secondary infection. It usually affects more than one child in a family. Only about fifty per cent of the children affected survive to an age at which they may be mistaken for idiopathic celiac disease, the remainder having previously died of meconium ileus or severe respiratory infection. No case has been known to survive longer than to about sixteen years of age.

Third: since both these conditions present large amounts of fat in the stools under the proper conditions of diet, a preparation of the stool may be made using an alcoholic solution of Sudan IV which will reveal this excessive fat content.

Fourth: Pancreatic insufficiency of the type affecting the amylase only contains very little fat in the stool but by staining with Lugol's solution large amounts of undigested starch granules may be easily demonstrated in smears of the stools.

BIOCHEMICAL research has added some very interesting observations with regard to idiopathic celiac disease. The oral glucose tolerance test has been found to give either no rise or an abnormally low blood sugar curve, whereas the parenteral intravenous glucose tolerance test and the adrenaline and insulin tests as applied to the glucose blood level are normal. Study of fat absorption reveals that in this disease seventy-five per cent or less of the fat is absorbed as compared with ninety to ninety-five per cent in the normal child, and as a result of this there is a failure to absorb an optimal amount of the fat soluble vitamins A, D and K. No disturbance of parenteral fat metabolism is found, except as a result of prolonged crises of diarrhea or prolonged periods of excessive dieting without vitamin supplementation. Xerophthalmia, severe rickets and bleeding are prevented by the retention of a borderline amount of these vitamins. The abdominal distention which the x-ray reveals is caused by loss of the normal tone, and motility may be greatly improved by the use of mecholyl or prostigmine but there occurs no corresponding improvement in the absorption of fat or glucose from the intestine. Examination of the duodenal digestive juices both before and after stimulation by secretin discovers no alteration in their known constituents, so that the conclusion up to the present is that the cause of idiopathic celiac disease is a lack of some intrinsic or extrinsic substance which prevents the absorbing cells of the intestinal wall from passing a normal amount of food substance from the intestinal lumen to the parenteral collecting system. Fat, glucose and lactoflavin, three of the substances which are poorly absorbed, require phosphorylation for passage through the cell, but no research work to date has been done to pin the fault to this mechanism. So much for idiopathic celiac disease.

WITH regard to celiac disease produced by cystic disease of the pancreas, the biochemist finds the fault to lie in an insufficient flow and enzyme content

of the duodenal juice. There is pancreatic achylia which is not affected by the stimulative action of secretin and the foodstuffs fail of absorption because of insufficient preparation in the lumen of the intestine. Absorption can be bettered by the addition of enzymes in the form of pancreatic extract to the diet. The enzyme content of the duodenal succus may be assayed from a mere five cubic centimeters of duodenal juice. The method in brief follows.

After a starvation period of nine or ten hours a Levine tube is guided into the child's stomach and all the stomach contents evacuated. The tube then is guided into the duodenum under fluoroscopic control and anchored by adhesive to the skin of the face when the correct distance is reached. By aspiration or by gravity the alkaline bile-tinged juice is collected in periods of fifteen to thirty minutes. A baby under one year is found to secrete about three to five cubic centimeters an hour and older children as much as forty-eight cubic centimeters in the same time. The fluid must be iced and the tests performed within twenty-four hours. The lipase is tested for by adding diluted juice to an olive oil of known saponification number, incubating for an hour and then titrating the fatty acid formed by the digestion against a tenth normal potassium hydroxide solution with thymol blue as an indicator. By calculation with the aid of proper formulae the result is converted into units of enzyme per cubic centimeter. The trypsin and amylase contents are found by mixing dilutions of the intestinal fluid with standard solutions of gelatin for the former and starch for the latter and by the use of a viscosimeter measuring the reduction in the viscosity of the standard solutions after digestion has been allowed to proceed in an incubator for one hour. Again by the use of appropriate formulae the findings may be converted into units of enzyme per cubic centimeter of juice.

IN both these types of disease the vitamin A absorption is poor and the vitamin A absorption curve of the blood is absent or low. When 7000 units of

vitamin A per kilogram of body weight is given by mouth there should be a rise of 200 units of vitamin A in the blood. Given parenterally the rise occurs properly. The failure of absorption of the proper amounts of vitamin A is thought to be the one important factor in the repeated respiratory attacks of those affected with cystic disease of the pancreas and it is pointed out in this respect that there is in this disease a tendency to hyperkeratinization of the ducts and cystic degeneration of the mucous secreting glands of the respiratory tract, the glands of the intestinal tract and of other parts of the body. The relationship of lack of vitamin A to hyperkeratinization has given rise to the hypothesis that the congenital occurrence and familial tendency of cystic disease of the pancreas might have some dependence upon a disturbance of the vitamin A metabolism in the mother. However, no research worked to add light to this theory has yet come forth.

In the type of celiac disease due to pancreatic insufficiency of amylase, the assay of the duodenal juice reveals this enzyme alone to be absent or very much diminished in spite of increase of pancreatic juice outflow following stimulation by secretin.

The prognoses of all types have been improved by these additions to our knowledge and by the use of the newer modes of combating infections such as the sulfonamide drugs and penicillin. So that at present it is much easier to care for a case of idiopathic celiac disease and there soon should be apparent a great reduction from the mortality of twenty-five to fifty per cent of the past decade. At the present stage of our knowledge of cystic disease of the pancreas only prolongation of life can be expected.

THE present treatment. Diet remains the most important part. Skimmed or whole protein milk in the age group under fourteen to fifteen months of age and skimmed milk in the older group are still the bases. The protein of the food is gradually increased to about 20 per cent or more of the total calories by the addition of casein, milk curds, skimmed milk, pot cheese, egg white and scraped meats.

Fruits are next added because the slowly fermenting monosaccharides are well handled in idiopathic celiac disease and sucrose is utilized well in cystic disease of the pancreas. Banana is settling down to its rightful place, that of one of the varieties of starch, one that is well taken care of a little earlier than other forms but sharing its place with other varieties of starch such as potato and cereal in the later phases, according to the idiosyncrasies of the child. If given in too large amount the banana leads to increased abdominal distention and the passage of enormous stools, even though less frequent, and without increasing the comfort or bettering the condition of the child.

In both types of disease it has been properly said that the caloric value of the diet should be increased fifty per cent in order to make up for the food that is lost through the intestinal tract, and all the known vitamins should be increased to eight or ten times the required amounts for the same reason. At least 50,000 units a day of vitamin A should be supplied, as supplement.

In cystic disease of the pancreas pancreaticin as a powder, one gram to each six ounces of formula milk, and as pancreatic granules, i.e., keratin-coated small masses about the size of granules of cane sugar, in doses of 2 to 5 grams daily, is added to the foods and increases definitely the use of the intestinal foodstuffs.

Prostigmine bromide may be used to better the intestinal tone in dosage of 3 to 7 mgms. three times a day, but the betterment accruing except in certain crises of the disease does not offset the possible side reactions of the method.

The crises of the disease should be promptly treated in the hospital with parenteral fluids to combat acidosis and supply glucose, and with blood transfusion to combat hypoproteinemia and anemia, but the child is safer during the intervening times at home and away from the hazards of infections.

The method of Blackfan of giving alternating intramuscular injections of 2cc. of crude liver extract on one day and 4cc.

—Continued on page 122

THE TRAIL FROM ALCHEMY TO PHARMACOLOGY

Herman Goodman, M.D.

New York, N. Y.

HAS the reader ever thought of an era without symbols or a shorthand for chemicals? Yet, long before writing, primitive man transferred his thought to his brother through sound and pantomime. The reproduction of pantomime on shifting sand, on soft stone, on sheepskin beaten thin, on papyrus, gave the first written symbols. The Chinese reproduced pantomime in its broadest form. The modern alphabet is a comparatively recent advance in symbols.

Alchemy, the pseudoscientific predecessor of chemistry, had its symbols. Some are in use today. Man admiring the golden sun made up a shorthand for gold—a perfect circle and a dot. The symbol for silver was the crescent moon. Physicians and chemists speak now of lunar caustic, meaning silver nitrate. Poets still sing to the silver moon. Iron had its symbol, too, the warrior with his shield. Incidentally, this symbol now indicates "male." It appears in case reports, in weighty tomes—a circle superimposed by an arrow pointing to the right. Copper was represented by the mirror of Venus: a circle with attached crossbars pointing down. You recognize this symbol as it denotes "female."

Ancient man did not utilize a single system of symbols. He did possess one universal symbol. The upright bar *I* was "one" in the Arabic system; the upright *I* was one to the Romans. For two, the Romans simply repeated *II*. Adding a third, made *III*—three, for the Romans. When the Arabs wrote 111, they had one hundred and eleven.

THIS is a good place to recall the ancient story. A sage was sought by two men with gnawing consciences. They wished to share their guilty secret with him. He faced the pair and said: "Before you tell me this troubling secret, which only the two of you possess, I would like to give you a lesson."

Placing a stylus on the table before

him, he said, "How much is this?"

The first man answered, "One", *I*.

"How much is this?" asked the wise man, as he put a second stylus beside the first.

The second man said, "Two," *II*.

The wise man added a third stylus to the others and asked, "What does it amount to now?"

Together the two men answered, "Three," *III*.

"You are wrong," said the sage. "The symbols now amount to 111—one hundred and eleven."

This homily is probably the classic ancestor of the thought—a secret told to a third person is no longer a secret.

Why were the philosophers of ancient times content to philosophize? They were following the line of least resistance. They were avoiding the pitfalls and the mental gymnastics of mathematics. Can MCLVII be multiplied by CXLI in your head? Have you ever wondered why this is difficult? The reason is simple. Roman numerals have no symbol to represent zero. 10 is *X*; 100 is *C*; 1,000 is *M*. How many are 100,000 in Roman numerals? How can millions be symbolized?

How much simpler it was for philosophers to philosophize, to adapt, than to undertake experimentation requiring the precision of mathematics—addition, subtraction, multiplication, or common fractions—with a system of symbols devoid of a cipher. Yet the pyramids were built to stand for centuries and man foretold the movements of the stars and planets!

There are other symbols. How did the hour come as a measure of time? Who gave the foot as a measure of length? From whence came the pound? The pint? How much was a stone? How large a grain? Who made the minute? All these were problems, each weighty, important, significant. Each played a part along the fascinating, if tortuous, path from Alchemy to Chemistry.

ALCHEMY was the medieval chemical pseudoscience. Its great objective was the transmutation of base metals into gold; the universal cure agent for disease; the elixir of perpetual life.

Another definition found in books assumes alchemy to mean infusion or mingling as juice or liquid, especially as extracted from plants for the purpose of producing medicinal ingredients.

This second idea may be carried back in time to Paracelsus. He diverted alchemy from the search of modes for changing lead or iron into gold to paths of medicinals. The alchemist became the pharmacologist. The incense burner and furnace were discarded for retort and human beings.

A vivid portrayal of the alchemist of the primitive type is given in the Romance of Leonardo da Vinci. Leonardo permits an alchemist to delude his master, the king, but stays behind the others and exposes the trickery of the alchemist. The gold displayed to the king had been hidden within the hollow of the staff utilized to stir the mystic brew!

The pharmacologist alchemist is described by the elder Dumas in the novel opening the series on the Queen's Necklace. Dr. Balsamo, the fictitious Count Cagliostro, has the old alchemist working on an elixir of life. One of the ingredients was the last drop of blood from a freshly killed new born infant.

The name of Robert Boyle is well known as a straddler of the old and the new in alchemy. His research disclosed the differences between elements and compounds. He was the first to voice the terms of chemical reaction. He was the first to talk of analysis. Robert Boyle also was the author of a recipe book, under the title: "Medicinal Experiments or a Collection of Choice and Safe Remedies for the most part simple and easily prepared." "Very useful in Families and Fitted for the Service of Country People."

Belief in alchemy of the primitive types has been swept away by more learning and less credulity among the masses of people. We still have our weak moments. Alchemists claiming to transmute base metals into gold are laughed down in

most circles. Annually, there is the parade of victims of gold brick salesmen. Daily, we read of duped persons giving their savings for a machine to print money indistinguishable from the product of the Federal Printing Office. Each hour and each minute alchemists in philosophies of living and of dying gain new adherents to schemes as scatterbrained as those fond hopes for taking base iron and converting it into gold by a few words and mystic passes!

THE field for experimentation and study was clear in the seventeenth century. The past was almost a closed book. False starts were made in the attempt to explain everyday processes. Why fire? Why rust? Why did a candle under a bell jar cease to burn? We know the answers. But two hundred-odd years ago people were influenced by the haphazard guesses of alchemy. The accepted answer was phlogiston. It worked for some things—not for others.

Before the American Revolution, Cavendish discovered hydrogen or inflammable air. He uncovered the composition of water. In 1774 Priestley discovered oxygen. Lavoisier proved oxygen supported combustion. He answered the question—why fire? Lavoisier experimented and uncovered the formation of the oxide of tin through exposure of tin to oxygen. He further proved by accurate weighing experiments that the oxide of tin was equivalent in weight to the tin and the oxygen. On the basis of his experiments, Lavoisier is accredited with the pronouncement of the so-called Law of the Conservation of Matter.

Another name to conjure with is Scheele. He discovered oxygen independently of Priestley; he prepared chlorine; and initiated many procedures of importance in chemistry and physics. But, he missed as many as he made.

Davy, Faraday, Liebig and Dalton continued the march of the new knowledge. Dalton determined the relationship of elements and combining elements. On the basis of his Law of Multiple

Proportions, Dalton expressed the theory of atoms; elements are made of smallest particles called atoms and chemical compounds of the elements are formed by the unions of these atoms in simple numerical proportions.

We seem to be entering into a modern world far from alchemy and alchemists. It is true. We are actually making it possible to name the atoms; further, to offer atomic weights. Berzelius, the Swedish chemist, investigated no less than 50. The system of symbols in chemistry is the creation of Berzelius. This invention of Berzelius may be compared in importance to the introduction of the zero cipher in mathematics. Who would like to have taken a course in mathematics in the time when the Roman numerals were the only ones available? Who wishes now to do mental arithmetic and multiply MCLVII by CXLI?

Berzelius gave the world of infant chemistry a pupil who rent asunder the superstitions existing in his time. Wöhler broke with the past through the creation of urea, supposedly an organic substance from inorganic materials. The terms, organic and inorganic, 100-odd years ago had far different meaning than today. Organic meant to the predecessors of Wöhler that the compound was something vital or living. Inorganic in chemistry applied to mineral or non-vital substances.

Names crowd upon us now. Liebig, Duncan, Newlands, Mendeleeff. And here is Perkin, the wonder boy chemist of England; founder of the modern coal tar industry. Perkin, on holiday in his father's kitchen, attempting to follow his professor's direction to prepare quinine, learned that Hofmann was not infallible. Did Perkin discard the unexpected mass resulting from the experiment to uncover a crystal? No. Did Perkin stop with this laboratory curiosity? No. He convinced his father and brother that they should enter business—to prepare artificial color for the dyers of cloth. Perkin had no easy task. He designed the equipment. He created the new chemicals required by the new equipment. He taught the dyers how to

apply the new fast color dyes. Perkin was not a hero in his own land immediately. The English vat dyers did not buy his new colors. They waited. Not until competition from continental fabrics, dyed with Perkin's dyes, forced their hand, did the English accept the dyes created by the schoolboy, so young that a guardian had to be appointed before the Crown would give its gift of a patent.

It is possible to name the Perkin invention as the cause of World War dreams of domination by the Germans, purchasers of the patent. How easily could the horror of poison gas and high explosives be traced to the kitchen experiment of 1856, by a boy not fifteen years of age.

Of course, no one person—no one group of persons—in any one decade or two decades has been directly responsible for any single advance in chemistry.

Perkin was a link in the chain from alchemy to octane ratings. A strong chain, but only a link. Another link in the chain was August Kekulé. Perkin had entered the manufacture of synthetic dyes rivaling those of nature. Perkin had disclosed odors, the like of which had never come from Nature's flower garden. The lowly coal tar barrel had been tapped again and again. Yet, a carbon chemistry which had come to take the name of organic chemistry had no visual symbol acting like the key of the cipher in mathematics, like the symbol of Berzelius.

It is not impossible to trace the wonder chemistry of Paul Ehrlich; his dye experiments on white blood cells; the clue to the serological reaction of Wassermann; the preparation of salvarsan and its modifications to the experiment of Perkin; to the carbon ring wrought in the dream of Kekulé. The sulfonamide group of miracle drugs, preservers of life, restorers of health, may also be regarded as a direct result of the wonder chemistry of the new alchemy—an infusion or mingling of chemicals along the path of the closed carbon chain.

18 EAST 89TH STREET

CANCER

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CANCER OF THE SMALL INTESTINE II

PATHOLOGY: Cancer of the small intestine like cancer in the large intestine develops at the points at which there is likely to be obstruction to the passage of the intestinal contents. These points are: First, in the duodenum, with its curve around the head of the pancreas. Second, the point at which the duodenum leaves the retroperitoneal area and becomes an intraperitoneal organ (duodenojejunal junction). Third, at the ileocecal valve. Fourth, areas in which inflammatory disease has produced constrictions; such as an area of diverticulitis, particularly inflammation of Meckel's diverticulum, and at the site of a previously done gastrojejunal anastomosis.

In the series of cases found in the literature we find adenocarcinoma of the duodenum reported as arising on a duodenal ulcer in seven instances; arising at or on the ileocecal valve in fifteen instances and at the site of a gastrojejunal stoma in one.

Slot and Fridjohn (84) report a case in which a diagnosis of duodenal ulcer was made, confirmed by x-ray study. About two years later the patient died suddenly. An autopsy showed that there was a spindle cell sarcoma at the junction of the first and second portions of the duodenum.

In the case reported by Hundley and Bates (53) x-ray study showed a definite deformity of the duodenal cap but no ulcer niche. After about six weeks of medical treatment exploratory celiotomy showed an annular carcinoma of the jejunum.

In the case reported by Bisgard and Cochran (6) an exploratory celiotomy showed a duodenal ulcer with extensive inflammatory adhesions to neighboring organs. A biopsy specimen obtained from the margin of the ulcer was diagnosed as

"chronic inflammation." However, additional studies of the material resected resulted in an amended diagnosis of lymphosarcoma.

Cohn (19) says the differentiation of ulcer and carcinoma of the duodenum is difficult and we must revise our attitude in regard to some duodenal ulcers in individuals past middle life.

Arguments against the development of a carcinoma on a pre-existing ulcer are advanced by Eger (29) who says: "There is little evidence that malignant disease of the duodenum ever arises from a simple duodenal ulcer."

Stewart and Lieber (87) say that no definite evidence has been found to support the theory that simple duodenal ulcer is a precancerous lesion.

In the case reported by Burke, Perkel and Gnassi (12) a clinical diagnosis of duodenal ulcer was made. The patient had had a hemorrhage which followed repeated attacks of epigastric pain and vomiting. X-ray study showed a definite pyloric obstruction. In 1937 an exploratory celiotomy showed that the gallbladder was adherent to the duodenum and formed the base of a duodenal ulcer. A second ulcer of the same size was found on the posterior wall of the pyloric ring. The authors say: "The presence of the neoplasm at the margins and crater of the ulcer excludes the possibility of a malignant degeneration of the latter and warrants the diagnosis of ulcerating adenocarcinoma."

Howard (51) says that carcinomata of the duodenum are generally conceded not to arise from pre-existing ulcers.

The possibility of cancer arising at the site of a diverticulitis or in a Meckel's diverticulum is well recognized.

Lynch (64) in his report of cases of primary carcinoma of the ileum, points out the possibility of cancer developing at the site of a diverticulitis or in a Meckel's diverticulum.

Soper (86) says that intestinal diverticula are sometimes the seat of cancer. Cases in which carcinoma or sarcoma have developed in a Meckel's diverticulum are reported by Franke (34), Joyce (55) and Gray and Kernoan (43).

Two of the cases reported by Ackman (1) took their origin from the ileocecal valve, as did one of the nine cases reported by Joyce (55). One of the cases reported by Horsley (50b), the case reported by Glasser and Mersheimer (38) and one of the cases reported by Menne, Mason and Johnston (67) also arose on the ileocecal valve.

Of the thirteen cases reported by Dockerty and Ashburn (28) three were situated "just proximal to the ileocecal valve"; two "at the ileocecal valve"; two were found at autopsy in the terminal ileum; one case "involving the ileocecal region" and one case presented "several nodes in the ileocecal angle."

Wartman (88) reports a case of adenocarcinoma in a man aged 58 years, the primary seat of which was at the opening of a posterior gastrojejunostomy performed twenty-nine years previously.

Occasionally the first indication of the existence of a malignant tumor of the small intestine is given by a massive hemorrhage, as was found in two of the cases reported by Segal, Scott and Watson (93). Gross hemorrhage is sometimes the immediate cause of death as was determined in two of the cases reported by Mateer and Hartman (65). In the case reported by Esposito and Stout (30) repeated intestinal hemorrhages occurred during the course of the disease.

The paper by Segal, Scott and Watson (93), above referred to, is devoted to a report of cases of massive hemorrhage from the bowel. One of the patients was a woman aged 49 years. She had a history of tarry stools, beginning in 1932. X-ray study of the digestive tract showed an inconstant irregularity in the duodenal bulb

and a biliary calculus. During the following year the patient had four attacks of severe melena with pronounced anemia. Surgery was advised but the patient refused operation. In 1940, however, the patient gave permission for operative treatment and it was found that the bleeding came from a carcinoid tumor in the jejunum. There were extensive adhesions between the gallbladder and the first portion of the duodenum. In 1942 a cholecystectomy was done for "gallbladder pain." There was no evidence of recurrence or metastases in the operative field.

The second patient was a man, aged 52 years. He had had two attacks of intestinal hemorrhage with pain suggesting duodenal ulcer. X-ray study showed a filling defect in the upper jejunum. The tumor was removed and an end to end intestinal anastomosis was done.

Histological studies showed that the growth was a carcinoma. A second operative interference was necessary four months later, on account of partial obstruction resulting from rotation of the intestine and adhesions to an inoperable mass. They also report a case of massive hemorrhage from the small intestine due to a hemangioma of the ileum in a man aged 22 years.

HISTOLOGY: Table III will catalogue the histological diagnoses.

TABLE III—HISTOLOGY

There were 182 malignant tumors divided as follows:

Carcinomata	135
Adenocarcinomata	122
Alveolar and Tubular	
Columnar Cell Carcinoma	1
Malignant Adenoma	3
Adenosquamous Cell	
Carcinoma	2
Anaplastic Carcinoma	1
Colloid Carcinoma	1
Cylindrical Cell Carcinoma	3
Hemangioma	1
Myo-epithelial Hamartoma	1
	135
Sarcomata	47

Sarcoma	17
Lymphosarcoma	13
Fibrosarcoma	1
Large Round Cell Sarcoma	1
Spindle Cell Sarcoma	3
Myosarcoma	2
Leiomyosarcoma	6
Hodgkin's Disease	2
Melanoma	2
	—
	47
Carcinoids	50
Malignant	17
Questionable	1
Benign	32
	—
	50 232

CARCINOMATA: In the 182 cases of malignant tumor of the small intestine there were 135 carcinomata (74.1 per cent). Of these 122 were recorded as adenocarcinomata. There were three cases of cylindrical cell carcinoma and three of malignant adenoma; two cases of adenosquamous cell carcinoma; one case each of "alveolar and tubular columnar cell carcinoma," anaplastic carcinoma, colloid carcinoma, hemangioma and myo-epithelial hamartoma.

Hoffman and Pack (49) say that the adenocarcinomata of the duodenum are usually columnar cell cancers; some of them are scirrhus annular growths. Still others have a bulky, polypoid appearance and some are the hard elastic tumors of the colloid type.

In the three cases reported by River, McNealy and Ragins (80) one was described as a mucus-producing adenocarcinoma of the ampulla of Vater, with invasion of the common bile duct and the pancreatic duct. The second was described as an adenocarcinoma of the orifice of the common [bile] duct. The third was described as a papillary adenocarcinoma of the pancreatic duct.

An unusual tumor was described by Cox and Parker (24). The patient was an infant, aged nine months. A clinical diagnosis of intussusception was made and at operation for its relief a small, hard, round, tumor-like mass was found. This

tumor was excised. It showed the following histological characteristics: "It was composed of single and multiple groups of closely arranged duct-like and cystic spaces surrounded by irregularly arranged interlacing bands of smooth muscle. Edematous fibrous tissue supported and engulfed the smooth muscle and epithelial lined spaces accounted for the considerable bulk of the tumor. . . . The epithelium lining the duct structures was of the tall columnar, undifferentiated type with eosinophilic cytoplasm and prominent basal nuclei, not unlike that of the pancreatic duct epithelium in its appearance. . . . The overlying mucosa showed necrosis, leukocytic infiltration and heavy surface exudation." The authors call this tumor a Myo-epithelial Hamartoma.

The case of Hemangioma was reported by Christopher (18). The patient was a man aged 26 years. The pathological report read, "Congenital Hemangioma of the ileum with secondary ulceration and hemorrhage." The paper refers to a review of the literature by Kajser (*Arch. f. klin. Chirur.*, 187:351 and 661, 1936). Cohn, Landy and Richter (20) report a case of anaplastic carcinoma.

There may be some criticism concerning the inclusion of the cases of Hemangioma and Myo-epithelial Hamartoma as carcinoma.

SARCOMATA: Of the forty-seven cases of sarcoma, seventeen had no other designation. There were thirteen cases diagnosed lymphosarcoma. These cases were reported by Ackman (1), five cases; Bisgard and Cochran (6); Borden and Taylor (9); Cameron (13), two cases; Charache (16a); Cohn, Landy and Richter (20); Finsterer (31); Menne, Mason and Johnston (67), two cases.

The case of fibrosarcoma was reported by Ackman (1) who also reported a case of large round cell sarcoma. The patient with fibrosarcoma was living and well twenty years after operation. The cases of spindle cell sarcoma were reported by LaRoque and Shiflett (59) and Slot and Fridjohn (84). The two cases of myosarcoma were reported by Silverstone (83)

and Shackelford, Fisher and Firor (82). The six cases of leiomyosarcoma were reported by Goldsmith (41); Seymour and Gould (81); Cohn, Landy and Richter (20), three cases; Bodenheimer (7). The two cases of Hodgkin's disease were reported by Cameron (13) and Badia (3). The two cases of melanoma were reported by Fiske (32) and Phillips (72). Hamilton, Kennedy and Herault (45) reported a case of neurogenic sarcoma.

The case of myosarcoma reported by Shackelford, Fisher and Firor (82) occurred in a woman who had had a hysterectomy for myosarcoma of the uterus in 1938. She died in 1942 from metastasis to the cervical spine and the brain. Charache's case (16a) of lymphosarcoma occurred in a boy, aged seven years. In the case of Hodgkin's disease reported by Badia (3) the growth was primary in the jejunum. The histological report read: "granuloma with abundant histiocytes and Reed-Sternberg cells."

In the paper by Finsterer (31) there is a report of a case of lymphosarcoma of the jejunum in which the patient had survived eight years. The paper by LaRoque and Shiflett (59) contains an excellent bibliography. In the case of melanoma reported by Phillips (72) the intestinal growth in the ileum was metastatic from a melanoma of the face.

C ARCINOIDS: In the 258 cases of small intestine cancer we found fifty in which the pathological diagnosis was "carcinoid" (19.4 per cent). The reporters were of the opinion that seventeen of these cases were malignant and twenty-three were benign. It appears that malignancy is associated with metastasis in the minds of the reporters. If there is no evidence of metastasis the growth is believed to be benign.

Ewing (94) says the term, "carcinoid," denotes a group of tumors composed of collections of cuboidal or cylindrical epithelioid cells in the cytoplasm of which argentophile granules are found. The cells are arranged in small acinar groups, cords or "palisade" form. "The uniform size, regular position, opacity and lack of hyper-

chromatism" in the nuclei "indicate moderate malignancy and recall the features of low-grade melanoma or basal cell carcinoma." The growths are usually found in the small intestine, the stomach, the appendix and, less frequently, in the colon. Ewing quotes the series, reported by Cooke (22), in which in a total of 104 cases, twenty-one were malignant (20.2 per cent) and eleven of these had metastasized, particularly to the liver in eight instances, and to the regional lymphnodes in all the eleven. In the case reported by Brunschwig and Childs (11) the growth was considered to resemble a carcinoid rather than any of the usual forms of carcinoma; but no argentaffine cells were found. Gold and Grayzel (39) report a case in which six nodular masses were found in the wall of the ileum at autopsy. Metastases to the regional lymphnodes and to the liver were present. The patient had died of congestive heart failure.

Between 1906 and 1943 there were 130 cases of carcinoma, adenocarcinoma, carcinoid and argentaffine tumors received in the Division of Surgical Pathology and the section on Pathological Anatomy of the Mayo Clinic. Dockerty and Ashburn (28) found that thirty of these cases warranted additional studies from the viewpoint of carcinoids (23.1 per cent). Based on evidence from histologic examinations, they conclude "that all carcinoid tumors are, in essence, peculiar low-grade (1, Broders) adenocarcinomas." In a case of metastasizing carcinoid tumor of the jejunum Gaspar (37) considers the growth to have originated from the cells of the glands of Lieberkühn. Ritchie (79) reported four cases of argentaffine tumors of the small intestine, one of which had metastasized to the regional lymphnodes and the liver. He is of the opinion that until the nature of the chromo-argentaffine cells of the normal intestine is understood, such tumors must be placed in the same category as basal cell epithelioma of the skin, so far as malignancy is concerned. Humphreys (52) is of the opinion that it is difficult to differentiate benign from malignant carcinoids. Raiford (77) says: "The majority of carcinoids in the small intestine

are apparently benign."

It seems to the reviewer that in order to be on the safe side when the pathologist reports that a tumor belongs in the group of carcinoid growths, it should be considered potentially cancerous and treated accordingly.

METASTASIS: Cancerous tumors of the small intestine metastasize primarily to the regional lymphnodes and the liver. Rankin and Mayo (78) say that they metastasize early. On the other hand, Hoffman and Pack (49) say that in a large percentage of cases no evidence of local extension or of metastasis is found. In the four cases reported by Ritchie (79) there were metastases to the regional lymphnodes and the liver in one case. Six of the nine cases reported by Raiford (77) had metastasized either to the liver or to the regional lymphnodes. In the forty-one cases reported by Stewart and Lieber (87) (six of his own cases and thirty-five from the literature) extension or metastasis to the liver and lymphnodes occurred in 75.6 per cent. In the case reported by Griffith (44) there were numerous metastases to the liver but none in the lungs. In the case reported by Horsley (50b) there was a metastatic nodule in the right ovary found at autopsy. In the case reported by Glasser and Mersheimer (38) there was a metastatic nodule in the diaphragm. Of the thirty cases studied by Dockerty and Ashburn (28) there were metastases to the regional lymphnodes in eleven and to the liver in five. In the case of adenocarcinoma of the ileum reported by McDougal (66) metastases were looked for but not found. Swollen lymphnodes proved histologically to be examples of chronic inflammation. Lieber, Stewart and Lund (62b) in a study of seventeen of their own cases and 205 from the literature found that the liver was palpably enlarged in 77.9 per cent and the gallbladder in 49.9 per cent. There is an exhaustive bibliography in this contribution.

There are two common COMPLICATIONS produced by new growths in the small intestine: intussusception and perforation. Cases of intussusception are re-

ported by E. L. and W. A. Kellogg (57); Gray and Kernohan (43); Fiske (32) four cases, in two of which the intussusception was produced by benign tumors; Gainey and Friedland (36); Cox and Parker (24); Phillips (72); Lichtenstein and Dutra (61); O'Donoghue, Lichtenstein and Jacobs (69). In the case reported by Lichtenstein and Dutra the tumor was an angiofibroma of the ileum. Cases of perforation are reported by Griffith (44); Gainey and Friedland (36); Kahn and Bay (56); Badia (3). In the case reported by Gainey and Friedland the patient had parotitis and healed pulmonary tuberculosis among the other pathological lesions. In the case reported by Lichtenstein and Dutra (61) there was a double intussusception.

The weight of evidence gathered from the review of these cases very definitely indicates that the TREATMENT should be surgical, although Lauwers (60) favors radium implantation in some cases. As Raiford (77) says: "Surgical extirpation constitutes the only satisfactory means of treatment. Resection is always to be preferred to local excision."

Rankin and Mayo (78) say that resection and end-to-end anastomosis is the surgical procedure of choice. With this opinion Boman (8) agrees. Soli (85) says that surgery is the only method that gives satisfactory results. Eger (29) says: "The treatment should be with radical excision wherever possible, otherwise it should be palliative. More thorough pre-operative preparation is one method of reducing the high operative mortality." River, McNealy and Riggins (80) report three cases of successful transduodenal resection of a peri-ampullary carcinoma with reimplantation of the ducts. Berger and Koppelman (5) say that with earlier diagnosis and with improved methods of pre and post operative care the prospects for improved results from radical surgery look brighter. Among these improved but complicated operative procedures are: 1.—pancreaticoduodenectomy, the technique of which has been described by Whipple (90a, 90b). Orr and Walker (70) also report a case of primary duodenal cancer treated with

that operative procedure. Brunschwig and Bigelow (95) have described an operative procedure which they call 2.—choleangio-cholecysto-choledochectomy. Other operative procedures which have been suggested are called 3.—cholecystogastronomy and 4.—transduodenal resection with implantation of the ducts.

SURVIVALS: So far as survival of patients with small intestine cancer treated with these complicated surgical procedures is concerned, the outlook is not very bright; but, as has already been said, the outlook is improving. One of Finsterer's (31) cases of lymphosarcoma of the jejunum lived eight years. One case reported by Lynch (64) lived three and one half years. A case of fibrosarcoma reported by Ackman (1) lived twenty years. A case of adenocarcinoma of the jejunum reported by Hundley and Bates (53) lived two years. The case of "alveolar and tubular columnar cell carcinoma" of the duodenum reported by Handfield-Jones (46) lived one year and four months. A case of adenocarcinoma of the jejunum reported by Jones and Harris (54) lived two years. The case of carcinoid of the duodenum (infrapapillary) reported by Brunschwig and Childs (11) lived fifteen months.

In the case reported by Kahn and Bay (56) the patient was operated for an adenocarcinoma of the jejunum in 1932. Seven years later (1939) the patient had an abdominoperineal resection for adenocarcinoma of the rectum. In October, 1941, this patient was again seen and was apparently well: nine years after the first operation and two years after the second. There was no evidence of recurrence or metastasis.

The patient of Shackelford, Fisher and Firor (82) was operated in 1941 for a myosarcoma of the peri-ampullary portion of the duodenum and the adjacent pancreas. The growth and the adjacent portion of the head of the pancreas were resected followed by a cholecystogastronomy and a Billroth I gastroduodenostomy. This operation was done in August and the patient was "quite well" in March, 1942. She

died three months later from metastases to the "cervical spine and brain" (clinical diagnosis not confirmed by autopsy). Furthermore, this patient had had a myosarcoma of the uterus removed four years before August, 1941. In the case reported by Burke, Perkel and Gnassi (12) the patient was operated for an adenocarcinoma of the duodenum in 1937 and was living without recurrence in 1943 (six years). His history showed that he had had suggestive symptoms as far back as 1932, making his survival eleven years in 1943. In the case reported by Child III (17) a one stage radical pancreaticoduodenectomy, preserving the external pancreatic secretion, was done. For fourteen months the patient was "entirely well save for two attacks of chill, fever, and transient jaundice interpreted as attacks of ascending cholangitis infection." At the end of the period an exploratory celiotomy was done and the tumor was found to have recurred and to have metastasized throughout the abdomen. The histological diagnosis made from one of the small metastatic nodules was "recurrent carcinoma."

The survivals of the carcinoids have been discussed earlier in this study.

During the preparation of this study Thomas A. Shallow, Sherman A. Eger and James B. Carty (*Amer. Jour. Surg.*, 69:372 (September) 1945) published a study of thirty-eight consecutive cases of histologically proven primary carcinoma of the small intestine seen in the Samuel D. Gross Surgical Division of the Jefferson College Hospital (Philadelphia). Of these cases fourteen were in the duodenum, all carcinoma. Eleven were found in the jejunum; five carcinoma, six sarcoma. Thirteen were found in the ileum; four carcinoma, nine sarcoma.

The authors say that cancer of the small intestine is usually insidious in its origin but that occasionally the symptoms develop suddenly with perforation, severe hemorrhage or acute obstruction. Thirty-one of their thirty-eight cases metastasized. Roentgenographic studies in twenty-nine cases demonstrated the lesion in seventeen and suggested it in one. The examination was unsatisfactory in three. The presence

of a tumor was missed in eight instances. Concerning treatment the authors say: "In addition to decompression of the gastrointestinal tract, it is essential that these patients be improved medically to a maximum degree before operation and supported after operation by correcting any fluid and electrolyte imbalance, anemia, vitamin and plasma protein deficiency and impaired function of the heart, liver and kidneys." Twenty-seven of the cases were treated with surgery with a mortality of 44.0 per cent. Four were living and well at the time of writing: twelve, seven, four

years, and ten months, respectively. Also in the *American Journal of Surgery* (70: 121 (October) 1945), there is the report of a case of lymphosarcoma of the small intestine by Harry Berman and Frank Mainella in a girl aged eighteen years. The patient was operated in March, 1941 at Unity Hospital (Brooklyn, N. Y.). The employment of deep x-irradiation was considered but rejected and in view of the fact that in 1945 the patient "was found in excellent health and four months pregnant" the authors think the decision was wise.

REFERENCES

1. F. B. Ackman, *Canadian Med. Assn. Jour.*, 29:137 (August) 1933.
2. Clyde I. Allen, *Amer. Jour. Surg.*, 40:89 (April) 1938.
3. Pasquale D. Badia, *Amer. Jour. Surg.*, 59:577 (March) 1943.
4. S. E. Barnhart, *Jour. Amer. Med. Assn.*, 101:443 (August 5) 1933.
5. Louis Berger and Harold Koppelman, *Ann. Surg.*, 116:738 (November) 1942.
6. J. Dewey Bisgard and R. M. Cochran, *Amer. Jour. Surg.*, 61:425 (September) 1943.
7. J. M. Bodenheimer, *Amer. Jour. Surg.*, 66:404 (December) 1944.
8. P. G. Boman, *Ann. Int. Med.*, 20:779 (May) 1944.
9. Daniel L. Borden and Floyd D. Taylor, *Military Surg.*, 92:255 (March) 1943.
10. Alexandre Brunschwig, *Bull. Assn. Frane. pour l'Etude du Cancer*, 25:52 (January) 1936.
11. Alexandre Brunschwig and Alice Childs, *Amer. Jour. Surg.*, 45:320 (August) 1939.
12. Edgar Burke, Louis L. Perkel and A. M. Gnassi, *Amer. Jour. Surg.*, 62:267 (November) 1943.
13. Angus L. Cameron, *Ann. Surg.*, 108:203 (August) 1938.
14. R. Franklin Carter, *Ann. Surg.*, 102:1019 (December) 1935.
15. Henry W. Cave, *Ann. Surg.*, 102:1097 (December) 1935.
16. Herman Charache, *Amer. Jour. Surg.*, 27:171 (January) 1935.
16. Herman Charache, *Amer. Jour. Surg.*, 59:601 (March) 1943.
17. Charles G. Child, III, *Ann. Surg.*, 118:838 (November) 1943.
18. Frederick Christopher, *Ann. Surg.*, 116:945 (December) 1942.
19. Isidore Cohn, *Ann. Surg.*, 119:342 (March) 1944.
20. Sidney Cohn, Joseph A. Landy, and Max Richter, *Arch. Surg.*, 39:647 (October) 1939.
21. Ralph Colp, *Ann. Surg.*, 107:74 (January) 1938.
22. H. H. Cooke, *Arch. Surg.*, 22:568 (April) 1931.
23. Nelson W. Cornell and Louis A. Hauser, *Amer. Jour. Surg.*, 53:177 (July) 1941.
24. Marcus E. Cox and Edward F. Parker, *Ann. Surg.*, 116:355 (September) 1942.
25. F. D'Allalans, *Jour. de Chirur.*, 33:449 (April) 1929.
26. Vincenzo J. Dardik, *Amer. Jour. Path.*, 10:313 (March) 1934.
27. C. R. Davis, *Amer. Jour. Cancer*, 23:337 (February) 1935.
28. Malcolm B. Dockerty and Frank S. Ashburn, *Arch. Surg.*, 47:221 (September) 1943.
29. Sherman A. Eger, *Arch. Surg.*, 27:1087 (December) 1933.
30. Joseph J. Esposito and Arthur Purdy Stout, *Amer. Jour. Roentgenol.*, 55:33 (January) 1945.
31. H. Finsterer, *Med. Klin.*, 29:485 (April 7) 1933.
32. Frederick A. Fiske, *Ann. Surg.*, 106:221 (August) 1937.
33. James M. Flynn, *Amer. Jour. Roentgenol.*, 48:163 (August) 1942.
34. K. Franke, *Zeit. Krebsforschung.*, 39:206 (May 23) 1933.
35. Marcel E. Gabor and Robert I. Hiller, *Amer. Jour. Surg.*, 27:121 (January) 1935.
36. John J. Gainey and Lester M. Friedland, *Amer. Jour. Surg.*, 50:112 (October) 1940.
37. I. Gaspar, *Amer. Jour. Path.*, 6:515 (September) 1930.
38. S. Thomas Glaeser and Walter Mersheimer, *Amer. Jour. Surg.*, 56:650 (June) 1942.
39. I. Roy Gold and David M. Grayzel, *Amer. Jour. Surg.*, 60:114 (April) 1943.
40. Ross Golden, *Radiologic Examination of the Small Intestine*, Philadelphia, Lippincott, 1945.
- 40b—Ross Golden, *Amer. Jour. Roentgenol.*, 53:604 (June) 1945.
41. Ralph Goldsmith, *Ann. Surg.*, 104:148 (July) 1936.
42. C. Allen Good, *Jour. Amer. Med. Assn.*, 117:923 (September 13) 1941.
43. Howard K. Gray and James W. Kernohan, *Jour. Amer. Med. Assn.*, 108:1480 (May 1) 1937.
44. F. Webb Griffith, *Ann. Surg.*, 109:785 (May) 1939.
45. John B. Hamilton, Putnam C. Kennedy and Pierre C. Herault, *Ann. Surg.*, 119:856 (June) 1944.
46. R. M. Handfield-Jones, *Lancet*, 2:1168 (November 19) 1938.
47. D. J. Harries and C. V. Harrison, *Brit. Med. Jour.*, 1:923 (May 4) 1935.
48. F. I. Harris and H. Rosenblum, *Arch. Surg.*, 23:805 (November) 1931.
49. William J. Hoffman and George T. Pack, *Arch. Surg.*, 35:11 (July) 1937.
50. J. Shelton Horsley, *Ann. Surg.*, 113:802 (May) 1941.
- 50b J. Shelton Horsley, *Jour. Amer. Med. Assn.*, 117:2119 (December 20) 1941.
51. John W. Howard, *Amer. Jour. Med. Sci.*, 206:735 (December) 1943.
52. Eleanor M. Humphreys, *Amer. Jour. Cancer*, 22:765 (December) 1934.
53. J. Warren Hundley and William Bates, *Ann. Int. Med.*, 12:128 (July) 1938.
54. T. E. Jones and I. E. Harris, *Amer. Jour. Surg.*, 43:769 (March) 1939.
55. Thomas M. Joyce, *Ann. Surg.*, 100:949 (November) 1934.

56. Maurice Kahn and Max W. Bay. *Amer. Jour. Surg.*, 58:145 (October) 1942.
 57. Edward L. Kellogg and William A. Kellogg. *Amer. Jour. Surg.*, 19:268 (February) 1933.
 58. Lane B. Kline and Abraham M. Schaefer. *Military Surg.*, 86:350 (April) 1940.
 59. G. Paul LaRoque and E. Lee Shifflett. *Ann. Surg.*, 98:178 (August) 1933.
 60. E. Lauwers. *Jour. de Chirur.*, 42:833, 1933.
 61. Manuel E. Lichtenstein and Frank R. Dutra. *Arch. Surg.*, 47:69 (July) 1943.
 62a Marshall M. Lieber, Harold L. Stewart and Herbert Lund. *Arch. Surg.*, 35:268 (August) 1937.
 62b Marshall M. Lieber, Harold L. Stewart, and Herbert Lund. *Ann. Surg.*, 109:219 and 383 (February and March) 1939.
 63. Marshall M. Lieber, Harold L. Stewart and David R. Morgan. *Arch. Surg.*, 40:988 (May) 1940.
 64. Jerome M. Lynch. *Amer. Jour. Cancer*, 18:610 (July) 1933.
 65. J. G. Mateer and F. W. Hartman. *Jour. Amer. Med. Assn.*, 99:1853 (November 26) 1932.
 66. William J. McDougal. *Amer. Jour. Surg.*, 66:119 (October) 1944.
 67. Frank R. Menne, David G. Mason and Robert Johnston. *Arch. Surg.*, 45:945 (December) 1942.
 68. Leslie L. Nunn. *Northwestern Med.*, 30:497 (November) 1931.
 69. John B. O'Donoghue, Manuel E. Leichtenstein and Maurice B. Jacobs. *Amer. Jour. Surg.*, 63:382 (March) 1944.
 70. Thomas G. Orr and George A. Walker. *Surg. Gyn. Obstet.*, 80:149 (February) 1945.
 71. Eugene P. Pendergrass and George W. Chamberlin. *Amer. Jour. Roentgenol.*, 48:16 (July) 1942.
 72. John Roberts Phillips. *Amer. Jour. Digest. Dis.*, 10:147 (April) 1943.
 73. W. Porselt. *Deutsch. Zeit. f. Chirur.*, 238:115 (November 22) 1932.
 74. Wm. H. Prioleau. *Ann. Surg.*, 119:272 (March) 1944.
 75. F. Proescher and J. Muir. *Amer. Jour. Cancer*, 24:72 (May) 1935.

76. I. Darin Puppel and Lloyd E. Morris, Jr. *Amer. Jour. Surg.*, 66:113 (October) 1944.
 77. Theodore S. Ralston. *Amer. Jour. Cancer*, 18:803 (August) 1933.
 78. F. W. Rankin and C. Mayo 2d. *Surg. Gyn. Obstet.*, 50:939 (June) 1930.
 79. G. Ritchie. *Arch. Path.*, 10:853 (December) 1930.
 80. Louis River, R. W. McNealy and Alex B. Ragins. *Amer. Jour. Surg.*, 52:289 (May) 1941.
 81. William J. Seymour and S. E. Gould. *Amer. Jour. Cancer*, 28:572 (November) 1936.
 82. Richard T. Shackelford, A. Murray Fisher and Whitmer B. Firor. *Ann. Surg.*, 116:864 (December) 1942.
 83. Maurice Silverstone. *Brit. Jour. Surg.*, 22:332 (October) 1934.
 84. Gerald Slot and M. H. Fridjohn. *Lancet*, 1:194 (January 25) 1936.
 85. D. Soli. *Clin. Chirur.*, 33:887 (August) 1930.
 86. Horace W. Soper. *Jour. Amer. Med. Assn.*, 92:286 (January 26) 1929.
 87. Harold L. Stewart and Marshall M. Lieber. *Arch. Surg.*, 35:99 (July) 1937.
 88. William B. Wartman. *Amer. Jour. Cancer*, 31:467 (November) 1937.
 89. Harry M. Weber and B. R. Kirklin. *Amer. Jour. Roentgenol.*, 47:243 (February) 1942.
 90. Allen O. Whipple. *Amer. Jour. Surg.*, 40:260 (April) 1938.
 90b Allen O. Whipple. *Ann. Surg.*, 121:847 (June) 1945.
 91. Reuben Finkelstein and Mendel Jacobi. *Ann. Int. Med.*, 7:1319 (April) 1934.
 92. Enrique P. Vinaera and George T. Pack. *Arch. Surg.*, 48:109 (February) 1944.
 93. Harry L. Segal, W. J. Merle Scott and J. S. Watson. *Jour. Amer. Med. Assn.*, 129:116 (September 8) 1945.
 94. James Ewing. *Neoplastic diseases*. Philadelphia, Saunders. Ed. 4:723, 1940.
 95. Alexander Brunschwig and Robert R. Bigelow. *Ann. Surg.*, 122:522 (October) 1945.

EDITORIALS

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ting fortitude and help us approach our opportunities with hope and industry. Make us worthy citizens of this great country and militant patrons of good government. Preserve within us the divine gift of personal freedom and the true spirit of democracy as planned by our fathers of old, giving us the right to choose our wives, our work, our church and our doctors—and to say so!

Diabetes Outlook

From the available data, Spiegelman and Marks (*American Journal of Public Health*, January, 1946) deduce that in 1940 there were at least 500,000 diabetic persons in the United States. Almost two-fifths were males and over three fifths were women. One-half of the total diabetic persons were at ages 60 and over. At least

50,000 persons in the United States became diabetic in 1940. The number of diabetic persons in the United States is increasing at a much greater rate than the total population. In the decade from 1940 to 1950 an 18 per cent increase may be expected as against a 9 per cent total population growth. Of our population under age 50, over 4 per cent of the females and more than 2 per cent of the males will eventually become diabetic.

Weird Pedagogy

Dr. Frederick Clayton Waite, in his recently published *Story of a Country Medical College: A History of the Clinical School of Medicine and the Vermont Medical College*, tells us that in the early part of the nineteenth century the course in dissection was "optional."

How much have we progressed since then, in principle? Anatomy is no longer optional, but it is taught by doctors of philosophy, not doctors of medicine.

CONTEMPORARY PROGRESS

RHINOLARYNGOLOGY

Modern Treatment of Mucocele of the Frontal and Ethmoidal Sinuses

H. M. GOODYEAR (*Southern Medical Journal*, 39:42, Jan. 1946) describes an operation for mucocele in the ethmoidal and frontal region that has given good results in his experience for a period of twelve years. It is generally recognized that it is difficult to maintain a nasal frontal opening after any type of frontal sinus operation; "the dream of the rhinologist" is to construct a new duct lined with epithelium; and in most cases of frontal and ethmoidal mucocele, such a duct has been prepared by the development of the mucocele, which is lined with a glistening epithelium "more perfect than any skin graft known to surgery." In the operation employed by the author a submucous resection of the septum is done in cases in which there is marked deviation of the septum. If the middle turbinate is large it can be split anteroposteriorly with a No. 15 Bard-Parker blade with a long and slender handle. The outer half of the middle turbinate is removed with a through and through biting forceps of the Gruenwald type. This opens the floor into the mucocele and permits the discharge of mucoid material, or pus if the mucocele has become infected. The lateral wall of the mucocele is not removed so that the epithelial lining of the cavity is not destroyed. The globular swelling in the orbit can be reduced after the mucocele is opened by pressure with the finger; if this procedure is painful, 1 per cent solution of novocaine may be employed for local anesthesia. After operation granulations are kept down by occasional application of 5 per cent silver nitrate. The author also advocates an early trephine of the frontal sinus in cases of acute ethmoid frontal infections following swimming, unless the condition clears up within twenty-four hours under treatment with penicillin given intramuscularly and sulfadiazine given by mouth with sodium

bicarbonate. The dose of penicillin is 20,000 units every three hours; and of sulfadiazine 15 grains every four hours with 30 grains or more of sodium bicarbonate. This combined treatment with penicillin and sulfadiazine has been found of value not only in these acute ethmoid frontal infections, but also in acute intraorbital infections. In the latter this treatment may render operation unnecessary, but if operation is to be done, the author opens the abscess which is usually in the region of the ethmoid cells under the periosteum, through a curved incision midway between the inner canthus of the eye and the midline of the nose. In an occasional case of this type, a few anterior ethmoid cells are also opened through the nose, but no radical operation on the ethmoid or frontal sinus is attempted until the acute infection subsides. In most cases in which this procedure has been used, radical surgery has not been necessary.

COMMENT

An excellent method of caring for mucocele, especially in those instances where it may be very readily entered through the nose. The discussion of acute frontal and ethmoid infections agrees with the best modern opinion regarding these situations.

L.C.Mch.

Abscess of the Nasal Septum Complicating Acute Ethmoiditis

A. L. BECK (*Archives of Otolaryngology* 42:275, Oct. 1945) reports 2 cases of abscess of the nasal septum which complicated acute ethmoiditis. Abscess of the nasal septum following trauma, either accidental or surgical, is not uncommon. But very few cases are reported in which abscess of the nasal septum followed ethmoiditis or other types of sinusitis. The ethmoid bone consists of a vertical plate and two lateral cellular masses. It may be assumed that in cases of ethmoiditis the infection may spread from the lateral mass along the

roof and across the cribriform plate to involve the septum. The infection might also involve the meninges; in one of the author's cases there were symptoms indicating a mild meningeal infection, but in the other no signs of involvement of the meninges. The chief symptom of septal abscess is complete and usually bilateral blockage of nasal breathing; tenderness to pressure on the nose, swelling of the nose, and pain in the nasal and orbital regions are also present as the abscess develops. In one of the author's cases, the diagnosis of abscess of the nasal septum was

made on the basis of these symptoms; and involvement of the ethmoid sinus was shown by x-ray examination. The ethmoid cells were opened through the nose and the septal abscess opened and drained. While the ethmoid cells on both sides were involved, incision of the septum on one side was sufficient to drain the abscess. The patient made a good recovery, and the ethmoid sinuses cleared up completely under Proetz displacement treatment. There was no destruction of septal cartilage. In the second case symptoms of sinus involvement were more severe and a diagnosis of pansinusitis was made. An external operation for drainage of the frontal and ethmoid sinuses and a Caldwell-Luc operation were done. The septal abscess was discovered on the fourth postoperative day; the septal mucosa was incised on one side and a large abscess evacuated. In this case there is a saddle bridge deformity but no perforation of the septum.

COMMENT

The author calls attention to an unusual type of pathology and describes two interesting cases which were expertly handled.

L.C.McH.

Penicillin in the Treatment of Vincent's Angina

H. R. TWINING, H. W. SZYLEJKO and R. A. KERN (*United States Naval Medical Bulletin*, 45:479, Sept. 1945) report 41 cases of Vincent's angina treated at a Naval hospital. These patients all had an ulcerated lesion, usually on the tonsils and in some instances on the gums; the ulcers showed

overhanging edges and a grayish yellow exudate. A preponderance of Vincent's organisms was found in smears made from the base of the ulcer after scraping the exudate aside; diphtheria and agranulocytic angina were excluded by smear, culture and differential white cell counts. Nearly 50 per cent of these patients gave a history of recurrent attacks of Vincent's angina. Most of them had been under treatment for the infection before admission to the hospital. All were treated by penicillin given by injection, 20,000 units every 3 hours for 10 injections (total dose 200,000 units). In all cases symptoms were relieved within 24 hours after the course of penicillin therapy was completed. In 29 cases the lesions had healed and smears were negative at this time, and no further treatment was given. In 11 cases, although the lesions were apparently healed, the smears were still positive, and a second course of penicillin

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(total dosage 200,000 units) was given. This resulted in complete healing of the lesions and negative smears in all but one case. In this case the lesions were healed, but the smears were still positive; a single injection of mapharsen (0.045 gm.) was given, after which negative smears were obtained. This patient had ulcerative lesions on both the tonsils and the gums and had been under treatment with various agents before penicillin therapy was tried. In the authors' opinion, a third course of penicillin would have been as effective as the arsenical in this case. The average period of hospitalization for these 41 patients was 7 days, i.e., 5.4 days from the time of beginning the penicillin treatment. In 197 cases of Vincent's angina treated by other methods in previous years, the average period of hospitalization was 23 days. Only 10 of these patients were followed up, and none had a recurrence of the infection. A number of other patients in this series are on shore duty at stations from which they would have been returned to the hospital had a recurrence developed, but none have been readmitted. In previous years, readmissions for Vincent's angina were common.

COMMENT

This would seem to be the ideal treatment for Vincent's angina. In ordinary private and clinic practice the difficulty of hospitalizing patients who are no more severely ill than is usually the case would seem to be a very large factor. We have rarely had any great difficulty in clearing up these cases by local treatment in the office unless there was an acute streptococcal infection present at the same time.

L.C.McH.

Results of Treatment of Carcinoma of the Larynx by X-Ray at Operation

T. A. WATSON and V. LAMBERT (*Journal of Laryngology and Otology*, 60:174, April 1945) report the treatment of 26 cases of cancer of the larynx by x-rays delivered directly to the larynx at the time of operation for removal of the ala of the thyroid cartilage on the affected

side. The Chaoul x-ray tube was employed with a circular applicator, which was placed flat on the exposed surface of the larynx centering over the middle of the affected cord. The dosage first used was 2,500 r, which was later increased to 3,000 r, and in 4 cases in the series was reduced to 2,250 r. In the cases in which this method was employed, the growth was either confined to the cord or extended beyond the cord into the ventricular or subglottic region; the growth did not extend beyond the midline or involve cartilage in any case; and no secondary glands were found. Of the 26 patients treated, 9 were treated three or more years ago, and of these 8 are living and free from recurrence and 1 has died with recurrence. The voice is serviceable in all these 8 cases. The results in the later series are not so encouraging as 11 of these patients have died, 2 from intercurrent disease, and 1 from block dissection of the glands of the neck, although the primary lesion had healed; 1 patient has not been traced. In a later series of cases a tube working at 140 kv., 5 ma. has been used instead of the Chaoul tube and a surface dose of 2,000 r, giving a depth dose at 1.5 cm. of 1,400 r. Of the 8 cases treated by this method, 5 are free from malignancy, 1 has a recurrence, 1 died postoperatively as a result of the anesthetic; 1 died two and a half months after treatment but there is no record as to the condition of the larynx. These cases have been treated too recently to permit deductions as to end results, but the dosage used was well tolerated.

COMMENT

Arbuckle demonstrated that a larger dose of radiation could be used in a larynx after removal of the thyroid cartilages. The authors' cases would seem to be those in which laryngofissure may have been adequate for removal and the results are apparently no better than those reported from laryngofissure.

Whether their results by this technique are sufficiently better than those obtained by radiation following surgical removal of the thyroid wings is quite difficult to determine.

L.C.McH.

OTOTOLOGY

An Improved Method for Classifying Audiograms.

RAYMOND CARHART (*Laryngoscope*, 55:640, Nov. 1945) describes a new method of classifying audiograms devised and used at Deshon General Hospital, Butler, Pa. The essential features of this method are as follows: The basic pattern of the curve is determined and recorded by the appropriate symbol, a key letter written as a capital letter, and the severity of the hearing loss is computed and recorded as a subscript to the major category symbol. The number used for this subscript is the loss in decibels at 1,024 c.p.s.; when this loss is recorded, the approximate loss at other frequencies is indicated by the type of the curve. Any deviation from the basic pattern is indicated by a modifier symbol, written as a small letter, placed before the major category symbol if the deviation is in the low frequency portion of the audiogram, and after this symbol if the deviation is in the high frequency portion. The position and magnitude of each deviation is indicated by appropriate subscripts and superscripts attached to the symbol of the deviation. The major categories in this scheme of classification are: Flat curve—approximately equal loss for all categories (symbol F); gradual downward slope—progressively greater loss for higher frequencies at a slope of 5 to 10 db. per octave (symbol G); marked downward slope—progressively greater loss for higher frequencies at a slope of 15 to 20 db. per octave (symbol M); rising curve—progressively less loss for higher frequencies, rising 5 to 10 db. per octave (symbol R); "through" curve—greater loss in the middle frequency region with at least 20 db. more loss in the middle of the curve than at its extremes (symbol T). A transparency that can be placed over the audiometric chart has been devised for use with this classification, which makes it possible to determine easily the code notation that best describes any particular curve, so that the rules of the classification method can be quickly applied.

COMMENT

This method of classification is probably quite useful where very large numbers of patients are examined and where simplification of statistics is of value.

L.C.McH.

Early Diagnosis and Arrest of Otosclerosis

E. P. FOWLER (*Archives of Otolaryngology*, 42:253, Oct. 1945) states that otologists know of no way to diagnose early (subclinical) otosclerosis and no certain method of diagnosing ankylosis of the stapedial footplate, and no way of curing the disease. Early otosclerosis causes no deafness, and even late lesions cause no deafness unless they involve the labyrinthine window so as to produce ankylosis of the stapes. Other types of deafness may precede or be superimposed on otosclerosis; there may be nerve deafness which is not difficult to diagnose and measure, because of the characteristic high tone loss and which probably has no relation to the otosclerosis. There may be conduction deafness due to middle ear disease, which is not difficult to diagnose as such, but which is difficult to differentiate from conduction deafness due to the bony ankylosis of stapes of otosclerosis. The typical audiometric curve of uncomplicated active otosclerotic ankylosis of the stapes shows a loss of hearing progressing inversely with the frequency. That is, for tones below 1024 double vibrations per second, or thereabout, there is a progressive loss of hearing going down the scale of frequency; this hearing loss increases with time. With such an audiogram if there is no history or evidence of inflammatory middle ear disease, it is "reasonable to infer" that the hearing loss is due to bony ankylosis of the stapes. However, even if there is a history of episodes of inflammatory middle ear disease, bony ankylosis may be present and may be the chief cause of the hearing loss. Even if otologists had the opportunity to examine a person before and just after the onset of bony ankylosis, it would undoubt-

edly be difficult to detect beginning ankylosis. The author in 1936 suggested a test for this purpose, the "Hobble test," but has not found it entirely satisfactory. He suggests that in the diagnosis of bony ankylosis of the stapes, the audiograms of the two ears of the patient should be compared with each other rather than with the average normal, as one ear usually differs from the other in early symptoms and early lesions of otosclerosis. A patient with beginning otosclerosis frequently observes a change in the quality of the pure tone at a critical intensity above the threshold. While there is no method of making a diagnosis of otosclerosis when there is no deafness, the author makes the following suggestions: Every child should be carefully examined otologically when entering school. If there is a history of progressive deafness in the family the child should be examined more frequently and measures taken to correct any abnormality. In families in which otosclerosis has occurred, comprehensive otological examinations should be made beginning before puberty, and this should include medical and laboratory studies even if there is no deafness. Special attention should be paid to any abnormalities or deficiencies related to hormones, vitamins and minerals. In a few families in which this plan has been followed, deafness has not developed in any of the children. Many more children in families with otosclerosis will have to be treated before it can be stated with any assurance that such measures have "preventive or arrestive values."

COMMENT

Doctor Fowler's discussions are always interesting. However, the problem would seem to be summarized in the first sentence in the above abstract.

L.C.McH.

Myringitis Granulosa

J. J. HOCHFILZER (*Laryngoscope*, 55:509, Sept. 1945) reports 7 cases of myringitis granulosa seen within a short time, chiefly among army inductees during physical examination. The author is of the opinion that this condition is more common than is indicated by the scarcity or practical absence of reports in medical

literature. The symptoms of myringitis granulosa are not severe; they are chiefly intermittent aural discharge, occasional itching and a feeling of fullness in the ear. Similar symptoms occur in chronic otitis media, and an incorrect diagnosis may be made unless the ear is carefully examined with a Siegle speculum. In myringitis granulosa, perforation of the ear drum does not occur; this is important in differentiating it from chronic otitis media. There is also free movement of the drum in contrast to marked limitation of movement or even fixation in chronic otitis media. A large portion of the drum may be normal in appearance, while only one area, usually the posterior-superior quadrant, shows "the raspberry-like" granulations; occasionally these granulations cover the entire drum. If the granulations are touched with an applicator, bleeding does not occur. If the external ear canal is freed from secretion and debris, there is no impairment of hearing in myringitis granulosa. And it is never accompanied by vertigo, general malaise, or fever. Bacteriological examination in the cases reported gave no conclusive evidence; Gram negative cocci and bacilli predominated; there were few pus cells, indicating that the inflammatory process is not of great severity and involves the superficial strata of the drum. While monilia spores were found in only one case in the author's series, he is of the opinion that fungi may be an important etiological factor in the early stage of the disease. This is also indicated by the fact that myringitis granulosa occurs chiefly in the summer months and in young individuals who do a great deal of swimming. The treatment of myringitis granulosa consists in cleansing the external ear canal of all secretion and debris, and cauterization of the granulations with 10 to 20 per cent silver nitrate.

COMMENT

The author has apparently coined a name for those cases of external otitis which are characterized by the formation of granulations on the external surface of the tympanic membrane. Such a condition has not been extremely unusual in our experience.

L.C.McH.

PUBLIC HEALTH, INDUSTRIAL MEDICINE AND SOCIAL HYGIENE

Epidemiologic Observations on the Use of Glycol Vapor for Air Sterilization

EDWARD BIGG and associates at Northwestern University (*American Journal of Public Health*, 35:788, Aug. 1945) describe an installation for generation and distribution of triethylene glycol by which glycol concentrations of 0.0025 to 0.004 mg. per liter of air and optimum relative humidities were obtained in barracks in a military camp. This installation was used for four of eight barracks in two buildings, the other four barracks being used as controls. Three groups of men, including an equal number in the test and in the control barracks, were studied, each group for six weeks, a total of approximately 1,000 men in the test groups and the same number in the control groups. The glycol vaporization resulted in a definite reduction in the total bacterial air contamination of the test barracks, and practically complete elimination of hemolytic streptococci from the air of these dormitories. For approximately the first half of each observation period, there was comparatively little difference in the hospital admission rate for air-borne infections from the test and control barracks. In the first two observation periods the overall reduction of such infections in the test barracks was 12 per cent; but the reduction in the last seventeen days of the period was 64 per cent. The data for the third period are inconclusive, because of high outside temperatures that resulted in overheating of sleeping quarters and opening of windows which reduced the glycol concentration. The incidence of positive throat cultures for hemolytic streptococci was definitely reduced at the end of the six-week period in the test barracks, while in the control barracks no such reduction was observed. The prevention of the spread of hemolytic streptococci from the throat of one individual to another was definitely demonstrated in the test barracks. A small epidemic of mumps occurred in the barracks during the period of the glycol vaporization test. For the first three weeks (the recognized incubation period for this disease), the number of hospital admissions

for mumps was much the same from the test and the control barracks. After that period there were only 4 cases from the test barracks and 14 cases from the control barracks. Glycol vaporization in these studies was used only in sleeping quarters, and did not prevent the spread of infection in mess halls, classrooms and elsewhere, but the authors conclude that the results obtained indicate that where large groups are sleeping in dormitories, the greatest incidence of cross-infection and the greatest degree of air contamination occurs in such sleeping quarters.

COMMENT

This is one of an increasingly large series of reports dealing with controlled experiments in air sterilization. Such experimentation has extended in four directions: (1) physical barriers; (2) ultra-violet radiation; (3) use of disinfectant vapors, and (4) laying of dust. The American Public Health Association's Sub-Committee for the Evaluation of Methods to Control Air-borne Infections, of which Dr. James E. Perkins, Director of Communicable Diseases of the State Department of Health, is chairman, is working closely with comparable committees of other organizations. The report of this committee undoubtedly will answer the questions: (1) will air sterilization reduce the incidence of colds; (2) can air sterilization be effected in schools, waiting rooms, public gathering places and large halls; and (3) what, if any, are the injurious physiologic effects of the different techniques in air sterilization.

E.G.B.

The Value of Influenza Vaccination When Done at the Beginning of an Epidemic

W. W. HALE and A. P. MCKEE (*American Journal of Hygiene*, 42:21, July 1945) report the use of influenza vaccine at the beginning of an epidemic at the State University of Iowa. The first recognized case of influenza occurred on Nov. 29, 1943, and immunizations were given on Dec. 2, 3 and 4. Five cases of the disease developed before immunizations were completed; the epidemic period continued to Dec. 25, 1943, although a few scattered cases occurred up to Jan. 5, 1944. The influenza vaccine employed was a mixed type A and type B vaccine, obtained from two different sources and

mixed immediately before being used. An injection of 1 ml. of this vaccine was given to 599 members of the A.S.T.P. unit at the University and a similar number from this unit were given control injections. Alternate men in each company received vaccine and control injections respectively. A record was kept of all men in this unit reporting for sick call, as well as of those hospitalized with a diagnosis of influenza. Only 39 of the 599 men given the vaccine showed a general reaction, and local reactions were mild, being severe enough to limit the use of the arm for a day in only 32 cases. During the first five days following vaccination 14 cases of respiratory disease not considered to be influenza developed in the vaccinated group, and 14 cases of the same type in the control group. And during the same 5 days 9 cases of influenza developed in the vaccinated group and 12 cases in the control group, indicating very little immunity developed in that period. From the sixth day after immunization to the end of the epidemic period (Dec. 25), 8 cases diagnosed as influenza developed in the vaccinated group and 39 cases in the control group, i.e., almost 5 times as many cases of influenza in the control as in the vaccinated group. In this same period 29 cases of respiratory infections not diagnosed as influenza developed in the vaccinated group and 49 cases of this type in the control group, a difference sufficiently great to be significant, suggesting that some of these infections may have been caused by the influenza virus. After Dec. 25, only 5 developed; 5 occurred in the vaccinated a few sporadic cases of influenza developed and 4 in the control group. The number of cases occurring in this period is too small to determine whether this indicates "a waning immunity" in the vaccinated group.

COMMENT

The results obtained by the authors with influenza vaccine (type A and type B) con-

*form with those reported by the Army on a group nearly ten times as large. The Army experience is summarized as follows: "The influence of subcutaneous inoculation of a concentrated inactivated vaccine on the incidence of clinical influenza in a series of Army Specialized Training Program units comprising approximately 12,500 men was studied during the recent epidemic of influenza A. Vaccination done shortly before or even after the onset of the epidemic was found to exert a protective effect with a total attack rate of 2.22 per cent among the 6,263 vaccinated and 7.11 per cent among the 6,211 controls, a ratio of 1 to 3.2." (Commission on Influenza, Office of the Surgeon General, U. S. Army, *Journal. A. M. A.* 124:982, 1944)*

E.G.B.

Aluminum Therapy in Silicosis

P. J. BAMBERGER (*Industrial Medicine*, 14:477, June 1945) reports the use of two types of aluminum therapy—metallic aluminum and hydrated alumina—in hard rock miners exposed to quartz dust. Fifty men were selected for treatment, and 49 of them have completed the course of treatment. Thirteen of the 49 men showed presilicosis on x-ray examination, i.e., exaggeration of the broncho-vascular shadows up to the stage where discrete nodules could be identified; the average age of the men in this group was thirty-four years with an average exposure to dust of seven years. In the 36 men with definite silicosis, the average age was forty-one years and the average time of exposure to dust was 11 years; there were only 7 men over fifty years of age, 4 of whom had third degree silicosis. The silicosis was of the first degree in 22 of these 36 men, second degree in 5, and third degree in 9 cases. The most frequent symptoms were cough, dyspnea and pain in the chest. All of these men had been previously examined at yearly intervals, but a thorough physical and x-ray examination was made before treatment was begun. The treatment consisted in inhalation of the aluminum powder daily; the period of inhalation was 5 minutes at first increased by 5 minutes daily to a maxi-

mum of 30 minutes. Metallic aluminum powder was given to 25 men, including 7 men with presilicosis; hydrated alumina was given to 24 men, 6 with presilicosis. Of those treated with metallic aluminum, 13 reported that they felt better, 9 reported no change and 3 felt worse. Of those treated with hydrated alumina, 11 reported that they felt better, 11 no change, and 2 felt worse. In the alleviation of specific symptoms, the hydrated alumina relieved 29 out of 67 and the metallic aluminum 19 out of 64 symptoms. Better results were obtained in presilicosis and the early stage of silicosis than in the later stages. A considerable number of men experienced some discomfort after the inhalation treatments, chiefly excessive coughing for an hour or two; such symptoms usually were less troublesome as treatments were continued. No material difference in the therapeutic effectiveness of the two powders was observed in this small series of cases. The hydrated alumina has the advantage of being a white powder less objectionable to the men, and causing less irritation of the respiratory tract.

COMMENT

The series described is too small and the period of observation does not give any indication of the permanence of the alleviation obtained. From present knowledge the control of silicosis lies in prevention. This calls for the cooperation and teamwork of the physician, the engineer and the laboratory technician. Good industrial control lies therefore in the necessary efforts to provide pure, non-injurious air in working places. There are few industrial processes where this is not possible.

E.G.B.

An Outbreak of Early Syphilis in Western New York State

B. F. MATTISON and E. H. HARRIS
(*New York State Journal of Medicine*,

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45:1105, May 15, 1945) report a study of cases of early syphilis in Western New York State. The first 2 patients seen sought medical advice from private physicians because of genital lesions. When a diagnosis of syphilis was made, report was made to the proper health authorities. The 2 patients, with a third who later sought medical advice for similar lesions, were interviewed in regard to sexual contacts within sixty days prior to onset of symptoms as well as after onset of symptoms. Four contacts were found, one of whom was known to be promiscuous; this person named 4 other contacts. Thus 11 persons were brought under medical supervision, and 9 of these (including the 2 original patients) were found to be infected. In the meantime 2 other infected persons had been found through pre-employment examinations and reported to the local health department (Rochester, N. Y.). Through these 2 patients, a total of 7 contacts were found, one of whom "led back" to the group found in the other investigation. Some of these contacts were outside the city and were reported to the appropriate local health department. By interviewing this group, a total of 25 persons were named, all but 2 of whom were located and placed under medical care. Only 4 of these 23 persons were not infected; and of the 19 with syphilis, all but one had recent infections. They were all placed under medical treatment and regularly followed up. Of these 19 patients only 11 sought medical advice because of symptoms, 6 were found through investigation of contacts and 2 by routine industrial examinations.

COMMENT

The files of all health departments are replete with similar records of outbreaks such as reported by the authors in Western New York State. If all cases of syphilis and their contacts were as carefully investigated as this series, such reports would be so commonplace that they would not warrant space in medical journals.

E.G.B.

MEDICAL TIMES, APRIL, 1946

Medical BOOK NEWS



Edited by
ALFRED E. SHIPLEY, M.D., Dr. P.H.

All books for review and communications concerning Book News should be addressed to the Editor of this department, 1313 Bedford Avenue, Brooklyn 16, N. Y.

Blood Serum Reactions

Studies in Biophysics: The Critical Temperature of Serum (56°). By Lecomte Du Noüy, D.Sc. New York, Reinhold Pub. Corp., [c. 1945]. 8vo. 185 pages, illustrated. Cloth, \$8.50.

THIS book treats of the mechanism of immunologic reactions of blood serum. New instruments particularly adapted to biological solutions and the perfecting of new techniques simple enough to be used and time saving are described. The viscosimeter for determining the viscosity of serum is adequately presented. There are chapters describing among many other things experiments on rotary power and rotary dispersion of serum, optical density, and scattered light, rate of sedimentation, electrical conductivity, hydrogen-ion concentration, and ultraviolet absorption of serum.

E. H. NIDISH

Military Surgical Anatomy

A Manual of Surgical Anatomy. Prepared Under the Auspices of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. By Tom Jones & W. C. Shepard. Philadelphia, W. B. Saunders Co., [c. 1945]. 4to. 195 pages, illustrated. Cloth, \$5.00.

TO paraphrase the ancient aphorism—
There's always room on the top—of the best seller book list, this manual of surgical anatomy rightfully belongs among the first five medical publications of the year.

At this late date it would be a work of supererogation to evaluate the extraordinary artistry that constitutes the bulk of Tom Jones' and W. C. Shepard's illustrations for books on surgery.

The present volume maintains the pre-eminence which, truth to tell, is not surprising. It is heartily recommended to the attention of medical students and surgeons alike, for its manifest practical value. And of special interest is the explanatory index, as a solid basis of instruction as well as a "refresher" for the practicing surgeon.

ALFRED H. IASON

History of Quinine

Cinchona in Java. The Story of Quinine. By Norman Taylor. New York, Greenberg, [c. 1945]. 8vo. 87 pages, illustrated. Cloth, \$2.50.

THIS is a very interesting description of the trials and tribulations which have been met in the production of cinchona. Included is a brief description of the ravages of malaria and its method of spread. Justifiable credit is given to the Dutch for their colonial policy and persistence in handling what was a very discouraging problem.

Atabrine will inevitably seriously upset the future of cinchona, but quinine, quinidine and other products will continue to occupy an important place in medicine, and the successful completion of a difficult problem will guide and encourage other similar projects.

VICTOR GROVER

BOOKS RECEIVED for review are promptly acknowledged in this column; we assume no other obligation in return for the courtesy of those sending us the same. In most cases, review notices will be promptly published shortly after acknowledgment of receipt has been made in this column.

A Textbook of Surgery. By American Authors. Edited by Frederick Christopher, M.D. 4th Edition, Philadelphia, W. B. Saunders Co., [c. 1945]. 4to. 1548 pages, illustrated. Cloth, \$10.00.

The Technique of Bandaging and Splinting. Including Sections on Slings and Adhesive Plaster Strappings. By Major Arthur M. Tunick, M.C., A.U.S. Illustrated by Guy Brown Wiser, New York, Essential Books, [c. 1945]. 12mo. 306 pages, illustrated. Cloth, \$8.00.

Surgery of the Spinal Column. By Col. Fred H. Albee, M.R.C., U.S.A., Earl J. Powers, M.D., & Lt. Col. Harold C. McDowell, M.C., A.U.S. Philadelphia, F. A. Davis Co., [c. 1945]. 8vo. 460 pages, illustrated. Cloth, \$8.00.

The Eternal Ones of the Dream. A Psychoanalytic Interpretation of Australian Myth and Ritual. By Jésé Róheim, Ph.D. New York, International Universities Press, [c. 1945]. 8vo. 270 pages, illustrated. Cloth, \$4.50.

Physical Chemistry of Cells and Tissues. By Rudolf Höber, M.D. With the collaboration of David I.

Hitchcock, J. B. Bateman, David R. Goddard & Wallace O. Fenn. Philadelphia, The Blakiston Co., [c. 1945]. 8vo. 676 pages, illustrated. Cloth, \$9.00.

Handbook of Practical Bacteriology. A Guide to Bacteriological Laboratory Work. By T. J. Mackie, M.D. & J. E. McCartney, M.D. 7th Edition. Baltimore, Williams & Wilkins Co., [c. 1945]. 12mo. 720 pages, illustrated. Cloth, \$5.00.

In the Doctor's Office. The Art of the Medical Assistant. By Esther Jane Parsons. With illustrations by Jean McConnell. Philadelphia, J. B. Lippincott Co., [c. 1945]. 295 pages, illustrated. Cloth, \$2.00.

Principles of Internal Medicine. A Course for Nurses. By D. M. Baltzan. Toronto, Ryerson Press (Boston, Bruce Humphries), [c. 1945]. 8vo. 398 pages, illustrated. Cloth, \$6.00.

A Synopsis of the Diagnosis of the Surgical Diseases of the Abdomen. By John A. Hardy, M.D. 2nd Edition. St. Louis, C. V. Mosby Co., [c. 1945]. 12mo. 528 pages, illustrated. Cloth, \$5.00.

PULMONARY TUBERCULOSIS

—Concluded from page 98

first rib keep a large cavity open.

Case 2. Fig. 6 Mrs. Bertha K. 11/14/38. Shows the end results of a successful

internal pneumolysis. The lung is now about 90% collapsed. There is no evidence of cavitation. A small effusion is present on the left side. Eventually, this was absorbed.

7300 GERMANTOWN AVENUE.

RECENT ADVANCES IN CELIAC DISEASE

—Concluded from page 101

of injectable vitamin B concentrate the next is of great value for support and improvement if persisted in for six weeks to two months. It has been shown to increase the absorption of the foodstuffs as well as better the accompanying anemia.

As for the minerals, lowering the loss in the stools by lessening the loss of fat through the intestine will suffice for calcium and phosphorus, giving at the same time large supplements of vitamin B. But iron should be supplied in an easily absorbable form such as .5 to one gram of

ferrous sulfate, each day.

In the form of celiac disease due to lack of amylase the withdrawal of starch from the diet and the addition of monosaccharides or disaccharides to replace caloric value is all that is necessary.

IN conclusion I should like to mention the names of a few of the investigators whose material I have used without giving credit. Drs. Dorothy Anderson of Babies Hospital, New York, Sidney Farber and his group at Harvard, Leonard Parsons of London, and many others such as Hardwyck, Blackfan, Howland, Saur, Vezear, Dyson, Nelson and Snelling.
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